TECHNICAL SERVICES DIVISION

OFFICE OF ENGINEERING

OPERATIONAL PLAN

1992-1993

May, 1992

James J. Murphy, Division Director

TECHNICAL SERVICES DIVISION

MISSION: To provide materials and geotechnical engineering services and targeted engineering research in a timely and cost-effective manner for the Department and other governmental agencies.

This is accomplished through:

* Development and recommendation of engineering policies, standards, and specifications.
* Management of a quality assurance program for materials incorporated into Department projects.
* Conduct of specialized engineering studies requiring investigations, testing, analysis, and recommendations.

The values we prize:

PEOPLE
TEAMWORK
EXCELLENCE
SERVICE
INTEGRITY

TECHNICAL SERVICES DIVISION

OPERATIONAL PLAN

1992-1993

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TECHNICAL SERVICES DIVISION

TECHNICAL SERVICES DIVISION
1992-93 OPERATIONAL PLAN

I. PLAN OF ACTION

A. General

The Operational Plan for Technical Services contains and describes the priorities, issues and goals for the program area for 1992-93. It is the result of the Operational Planning Process by the program's Main Office and Regional managers.

The Plan consists of two sections; (I) Plan of Action and (II) Goals.

The Technical Services program provides materials and geotechnical engineering services and targeted engineering research to the Department through the:

- development and recommendation of engineering policies, standards and specifications.

- management of a materials quality assurance program.

- conduct of specialized engineering studies requiring investigations, testing, and analysis.

These services are provided through the Materials, Soil Mechanics, and Engineering Research and Development Bureaus in the Main Office in conjunction with the Technical Services, Materials and Soils units in the Regions. The Technical Services program is founded on a multi-million dollar investment in laboratories and equipment in both the Main Office and the Regions and a dedicated, capable staff. There are approximately 265 employees in the Division and almost 300 in the Regional counterparts. In the Regions, the program receives its staffing through the Design and Construction budgets.

As part of the Operational Planning Process, Main Office and Regional program managers discussed a range of issues including:

- Program delivery
- Program initiatives
- Resource management
- Performance measures
- Items needing special attention (goals)
- Continuous improvement

Most of the issues and trends affecting the Department as a whole also impact the Technical Services program. These include development and implementation of an

expanded capital program, marginal resources, work force issues, new or changing technology and environmental requirements, organizational role change, and emphasis on management improvements. Other issues are somewhat unique to the program, particularly its concern to properly maintain the "technical services infrastructure," i.e., specialized vehicles, test equipment, laboratories, etc.

The program serves all elements of the Department as well as some external clients because of the program units' expertise and facilities. The majority of services now provided directly support the capital program and this, along with research, are the most significant parts of the mission. The Department's expanded capital program over the next few years will present additional challenges as the workload strains the Division's ability to deliver technical services. Capital program support will remain the Division's first priority and programmed or requested staff enhancements are expected to facilitate this.

The Regional Technical Services groups will continue their heavy reliance on seasonally assigned permanent staff and Temporary Construction Inspectors to cover needs for engineering, drilling, plant inspection, laboratory and field testing, IAST, etc., as they have done in the past. At the Division-wide operational planning meeting held in March 1992, each Region reiterated a common need for additional staff resources. With the compounded responsibilities of Program and Project Management, pavement evaluations, implementation of Heavy Duty mixes, and other duties placed on the regional Soils and Materials units, they are struggling to keep up. Additional discussion of staffing needs can be found in Section **C. Resources.**

The Division intends to fully support the Office of Engineering's emphasis on training. Division and Bureau training coordinators have been named and will work closely with other training coordinators in establishing and implementing an improved program. Training emphasis will be on bringing new hires up to full productivity and maintaining the technical expertise of the existing staff.

B. Priorities

The demands of meeting an expanded capital program over the next few years will strain the resources of the Technical Services program. It will be necessary to continue to prioritize activities to ensure that critical functions are maintained and priority initiatives are progressed. To assist the staff in decision making, the following priority areas have been identified (see Appendix A and B):

Research

1. ERTAP program delivery. Timely completion and quality work on all scheduled projects.

2. Consultation. Continue to provide expert staff services.

3. T^2 (Technology Transfer). Strengthen activities and plan strong focus on SHRP product implementation.

4. ISTEA HPR Increase. The new act provides for increased funding levels for research. A proposal to 1) expand technology transfer activities and 2) develop a contract research program has been presented. If approved, considerable management attention will be required to implement these initiatives. See proposed '92-'93 Goal #3.

5. Continuous Improvement
   a. Hay Survey follow-up. Continue to implement items identified for action in post survey deliberations.

   b. Training. Place increased emphasis on improving planning, coordination, and implementation of training activity. Link to office and Department efforts.

Soils

1. Program delivery support
   a. Basic program. Line and staff activities needed for program delivery.

   b. Accelerated program. Adjust to changes.

   c. Prime-the-Pump activities. Provide lead on rock slope projects.

2. Initiatives
   a. Pavement Thickness Design Procedure. Develop by January 1993 to comply with Pavement Management initiative.

   b. Pavement Drainage Mandate. Develop recommended changes to comply with FHWA requirements. Link to a. above.

   c. Automation activities. Continue within available resources.

   d. AASHTO Accreditation for MO Soils Laboratories.

   e. Subsurface Corrosion Project. Complete evaluation and publish report.

   f. Waste product activities. Plan fly ash fill project.

3. Continuous Improvement
   a. Hay Survey follow-up. Continue to implement items identified for action in post survey deliberations.

b. Training. Place increased emphasis on improving planning, coordination, and implementation of training activity. Link to office and Department efforts.

Materials

1. Program delivery support
   a. Basic program. Line and staff activities needed for program delivery.

   b. Accelerated program. Adjust to changes.

   c. Prime-the-Pump activities. Assist in mono-deck projects.

2. Initiatives
   a. QA/QC, asphalt & concrete pilots. See '92-'93 Goal #1.

   b. HD and RA asphalt mixes. Implement new specifications in close coordination with Design, Construction, Regions and industry.

   c. High friction aggregate change. Complete implementation of findings of dolomite aggregate study.

   d. Glass/rubber asphalt implementation. Complete implementation of Executive Order 142. See '91-'92 Goal #1.

   e. ACI recertification program. Develop procedure to handle lapsing certifications.

   f. Pavement management activities. Continue Volume I/II training as needed and start work on maintenance level versions.

3. Continuous Improvement
   a. Hay Survey follow-up. Continue to implement items identified for action in post survey deliberations.

   b. Training. Place increased emphasis on improving planning, coordination, and implementation of training activity. Link to office and Department effort.

Regions

1. Program delivery support
   a. Basic program. Line and staff activities needed for program delivery.

   b. Accelerated program. Adjust to changes.

c. Prime-the-Pump activities. Participate in selected activities/projects.

2. Initiatives
   a. Various MO related. See Soils/Materials initiatives.

   b. Various Region specific.

3. Continuous Improvement
   a. Training. Place increased emphasis on improving planning, coordination, and implementation of training activity. Link to Main Office and Department effort.

   b. Various Region specific.

C. Resources

Staffing, Main Office - Future staffing needs in Soils and Materials was addressed in the Department's '92-'93 budget. Based on resource management efforts, additional staff was requested; 10 in '92-'93, 30 in '93-'94, 17 in '94-'95, and 4 in '95-'96 and '96-'97. The assumption was made to staff for capital program increases not necessarily to restore the organization back to pre-'91-'92 downsizing. Staff has also been requested in Research, also downsized in '91-'92, as part of the enhanced HPR funding initiative. The additional staff (approximately 8) would be used to enhance technology transfer and administer a new contract research program.

Staffing, Region - As discussed previously, more management attention needs to be focused on needs in Regional Technical Services units. A general assessment indicates that the "work will get done" in '92-'93. The assessment of '93-'96 when program increases occur and new the initiative workload fully takes hold is that the entire "job can't get done" unless help is provided or changes are made. In order to more fully evaluate this, the Soils and Materials Bureaus are undertaking efforts to more precisely evaluate workloads, assess the capability of current resources, and identify gaps using resource management tools whenever possible. This review will be done in close coordination with the Regions, Facilities Design and Construction. The goal is to incorporate immediate needs in the Department's '93-'94 budget request.

NPS funding - The Division's '92-'93 Equipment Base has been restored to near the "pre-budget crisis" level. The restoration of the Equipment Base will allow the Division to begin to repair and replace equipment which has been extended beyond its useful life because of the deferred funding. It is important that this restored level of funding be continued so that the Division's inventory of $4.7 million in equipment can be properly maintained. Regions and Main Office units will be contacted for a list of priority repair and replacement needs. Supply allocations are at a level that should allow the Division to operate normally. Travel allocations have been increased slightly to allow for the additional travel to the Regions necessitated by expanded involvement with PPM and decentralized QA activities.

D. Issues

The items listed below are some of the current issues facing the program in '92-'93.

1. Work Force - Some Technical Services units are faced with an aging work force situation. Approximately two-thirds of the Drill Rig Operators, 14 percent of Main Office Soils personnel and several key Regional personnel are retirement age. To prevent disruptions to program operations, the Division must aggressively pursue training and transfer of experience to younger staff. This is particularly important in the drilling area where many years of experience are required to obtain the skills necessary for a quality drilling operation. The increased emphasis on training will assist in this area.

2. Quality - Quality has always been emphasized in Technical Services program areas. Changes in the procedures by which quality is controlled will be made on a continuing basis. The Main Office is taking responsibility for specifications and procedures through quality assurance, and the Regions are taking responsibility at the project level through quality control. Refinements will continue to be made in the Division's implementation of Heavy Duty mix designs, adjustments in QC/QA procedures, plan and project reviews, and other important program operations.

3. Technology - With the rapidly advancing and always changing technology in the highly technical fields in which the Division operates, it is always important to keep abreast of new developments in order to remain at the forefront. With this in mind, the Division will increase emphasis on technology transfer and implementation through the Technology Transfer (T^2) Section of the Engineering Research and Development Bureau. SHRP completes its contract research program in March '93 and extensive plans are being made at a national level for implementation. A Department implementation plan needs to be developed in '92-'93.

4. Environmental Issues - The Division continues to be involved in environmental issues and the trend is toward greater involvement through hazardous materials testing. The role of the Division's labs to meet the Department's hazardous materials testing needs must be addressed and a strategy and policy established to ensure that the labs are in a position to support Department activities.

E. Goal Setting

Technical Services continues to define goals as major initiatives or those items that need special management attention. Goal activities and products developed over the past few years have had many positive impacts in the program. In setting goals for '92-'93, four goals were carefully selected from a variety of suggestions from managers who participated in the process. The major criteria used for '92-'93 was to select goals that were central to the Technical Services program. Refer to Section II. Goals for more details.

II. GOALS

A. Past Goals

The Technical Services Division had four operational goals in its '91-'92 Operational Plan. Those goals and their status are outlined below.

1. Glass/Rubber Paving Mixes - To establish specifications and engineering guidelines for the use of recycled glass and rubber in asphalt concrete pavement by July 1, 1991; and to implement those specifications in the Department's highway capital and maintenance programs by July 1, 1992, within available funding and consistent with program requirements.

   Status: Complete. Specifications have been written and will be implemented into contracts by the mandated date of July 1, 1992.

2. Staff Resource Management - To develop a complete description of the Technical Services Program Level and Project Level staff resource management work plan to be used in estimating staffing needs to accommodate the Five Year Capital Program.

   Status: Complete. Staff Resource Management procedure was developed and implemented in the Division. The products of the goal were used in developing staff estimates required to support the expanded capital program.

3. Rock Slope Policy - To develop and implement a Department policy which includes an inventory and a hazard rating procedure for potentially unstable rock slopes along highways as an element of regional capital program planning.

   Status: Complete. A field rating procedure manual has been developed and is being implemented.

4. AASHTO Laboratory Accreditation Program - To seek AASHTO accreditation of the Materials Bureau laboratory for two major construction materials: portland cement concrete and liquid asphalt. The accreditation will demonstrate that the Bureau's laboratory is capable of producing test results that meet nationally accepted criteria for accuracy, precision and reliability.

   Status: Complete. Laboratory accreditation was received from AASHTO in August, 1991.

B. '92-'93 Goals

Four new operational goals have been identified for this year . A brief description of each goal is given below.

1. Asphalt & Concrete QC/QA - The Department has made a commitment to change quality management for asphalt concrete and portland cement concrete from a "methods approach" to a "QC/QA approach". Under this new system, contractors and suppliers will be made responsible for testing and controlling materials quality and the Department will monitor these activities for assurance purposes. This major effort will take place over a five year time span.

   Goal Manager: Thomas Wohlscheid
   Goal Completion Date: October 1995

2. Drilling Service Alternatives - The Department has a fixed in-house drilling capacity that has traditionally been supplemented with drilling contracts when workload exceeds available resources. Due to the size and nature of the coming workload and the potential problems with aging equipment and insufficient staff, it is desirable to identify all options for providing drilling support for the capital program. Under this goal, the procedures of other agencies will be studied and other various contractual arrangements for these types of services will be evaluated. Action alternatives and recommendations will be developed.

   Goal Manager: Phillip Walton
   Goal Completion Date: March 1993

3. Contract Research Program - As part of the enhanced HPR funding opportunities in ISTEA, it has been proposed to establish a contract research program. Under this proposal, contract researchers will work on specific projects under Department direction. Various arrangements are possible, including using the RFP process aimed at all research providers or through arrangements with universities. Under this goal, the planning, design and administration processes for this new program would be developed.

   Goal Manager: Robert Perry
   Goal Completion Date: June 1993

4. Region Performance Measures - As part of the evolving quality assurance role of the Main Office, work done under this goal will start to establish formal performance measures for the Region Technical Services groups. With the coming demands of the increased capital program, it will become even more important to measure the effects of adjustments and enhancements in the program areas in order to fine-tune actions and allocation of resources.

   Goal Managers: Peter Melas, Robert Winans
   Goal Completion Date: February 1993

SOIL MECHANICS BUREAU

OPERATIONAL PLANNING
DRAFT OUTLINE

March 12, 1992

Program Delivery

- 1991-92 program - done.
- 1992-93 program - can deliver with adequate resources.
  - Need 28 fully staffed drill crews (current pattern).
  - Memos were sent to Regions requesting laborer hiring.
  - May selectively use drill contracts for peak workloads.
  - SMB investigating alternative procedures for drill contracts.
  - Assumes adequate staffing of engineers and technicians in Regions.
  - Assumes replacement of deficient equipment (Crew cabs, rack trucks, drill rigs, etc.)
  - Assumes timely repair of drill rigs and pumps.
  - Assumes availability of overtime and travel expenses.
  - "Prime the pump" projects may require OT and temp service Engineering Geologists.
  - Jeopardy if IAST required on all State projects. Inadequate Region staff and support plus increased load in Main Office lab.
  - On-site detours are requiring more engineering (temporary support).
  - OSHA and DEC regulations are increasing engineering involvement (specs, training, etc.).
  - Decentralization is resulting in more work for Region Soils and the Bureau. As responsibility shifts, more questions are asked of Region Soil Engineers.
  - SMB Area Soils Engineers are spending more time in Regions. Information flow to SMB is a "dribble" compared to past years.
- Training
  - Our commitment to SMB and Region Training will continue.
  - Training is essential, but is a production drain. It needs strong management support to accomplish.

- Decentralization, retirements and new staff will increase training needs.
- The new Civil Service rules on transfers will increase training needs.
- Need to start training now for increased program in 1994-95 and after.
- Department (and GOER) emphasis on management training.
- Need more technical training (attendance at professional seminars, conferences) to improve our technology.
- Requirements for Earthwork Inspector's Schools will increase with additional program and Region staff.

Initiatives

- Initiatives in Progress:
  - Assistant Drill Rig Operator Trainee (Laborer SG-6 to SG-8).
  - Rock Slope Hazard Rating procedure.
  - Pavement Thickness Design Manual.
  - Evaluation of falling weight deflectometer (FWD).
  - Corrosion evaluation of Buffalo Skyway piles.
  - TACT upgrade.
  - More use of automation tools.
  - General Soils Lab Automation plus SMLA drill logs.
  - Consolidation of specifications for H-pile walls (task force).
  - Update of several control manuals.
  - AASHTO accreditation for several lab tests.
  - Flowable fly ash backfill.
  - Evaluate NASHTO Testing Guidelines for Geosynthetics (N.Y.S. has the lead).
  - Long-term performance evaluation of rock bolts.
  - New computer program for rock socket design.
  - Waste product evaluations (recycled concrete, asphalt for subbase, glass, etc.).
  - Adopt TF-27 construction inspection manual for pavement tieback walls.
  - Resilient Modulus round robin testing program (AMRL).

- Developing recommended changes to AASHTO standards for gravel testing.

- Planned Initiatives:
  - More standardized training (videos and manuals) needed.
  - Evaluate CADD Insitu software.
  - More AASHTO accreditation.
  - Clarify dynamic soil parameters for DPLT and seismic response.
  - Implement NASHTO geosynthetics testing program.
  - Consider approved lists for retaining walls (generic specs.).
  - Develop generic grouting specifications.
  - Q/A update for geosynthetics.
  - Plan the role of the FWD in pavement design.

Resource Problems

- Changing demographics requires more training time (older, less educated staff).
- Restrictive OSHA and environmental controls require more design and training. (Construction and demolition debris, water supply, water contamination, environmental remediation, etc.)
- Preferred lists, re-employment roster and Civil Service rule changes will make obtaining qualified people harder and losing trained staff easier.
- Recent Civil Service unfavorable grievances rulings affect drilling promotions in Regions.
- The number and quality of State cars and trucks.
- Travel restrictions on out-of-state travel and use of airlines, slow production.
- Inability to get Region 1 lab to "standards" and to improve other Regional labs.
- The expansion of the program will require more resources, including cars, equipment, travel, etc.
- Concern for lack of promotional opportunities to retain trained staff, especially at Senior level (CE I with PE).
- Lack of timely Civil Services exams.

Hay Activities

- We are considering 15 training sessions for technicians as a result of the Hay Survey.

- The list of facility deficiencies identified have now been satisfied.

Goal Ideas

- Reassess rock slopes on a priority basis.
- Seek accreditation of 5 AASHTO tests.
- Develop a procedure to resolve the NASHTO Regional Testing issues.
- Complete the Pavement Thickness Design Manual.
- Review existing performance measures and consider additional ones.

TECHNICAL SERVICES DIVISION

OPERATIONAL PLANNING

MATERIALS BUREAU PROGRAM
MARCH 25, 1992

Program Delivery

- Maintain as top priority
- Coordinate closely with Regions
- Selectively modify QA Programs
  (balance sampling and testing capability with assuring adequate materials quality)
- Provide accurate and timely acceptance actions
- Provide engineering support, including:
  - monolithic bridge deck evaluations
  - pavement evaluation/treatment selection

Program Initiatives

- Heavy duty AC mix warrants
- QC/QA - ACC pilot projects
- Monitor rubber/glass AC mixtures
- Micro-surfacing specifications
- Expand capability and experience in environmental testing
- Implement AC pavement high friction aggregate specification revision
- Streamline precast concrete drawing reviews/approvals
- Develop ACI concrete technician re-certification program
- Retrofit pavement friction test system
- Develop a computer database for selected approved list materials
- Install micro-computer LAN

Resource Management

- Establish materials inspection agencies agreements for 1992-94
- Provide supplemental testing/coring services to Regions through materials inspection agencies
- Utilize temporary technicians
- Use personnel re-assignments to even out workload
- Address testing equipment needs
- Request LIMS
- Seek travel approvals for training in technical specialties

Goals (Ideas)

- Pilot QC/QA ACC project
- Pavement friction test systems retrofit
- Develop a computer database for selected approved list materials
- Install a micro-computer Local Area Network (LAN) in the Bureau's facilities in buildings 7 and 7A and a bridge between them.

Hay Survey Activities

- Weekly staff meetings
- Improved Approved List index
- Cross training-product operations/lab

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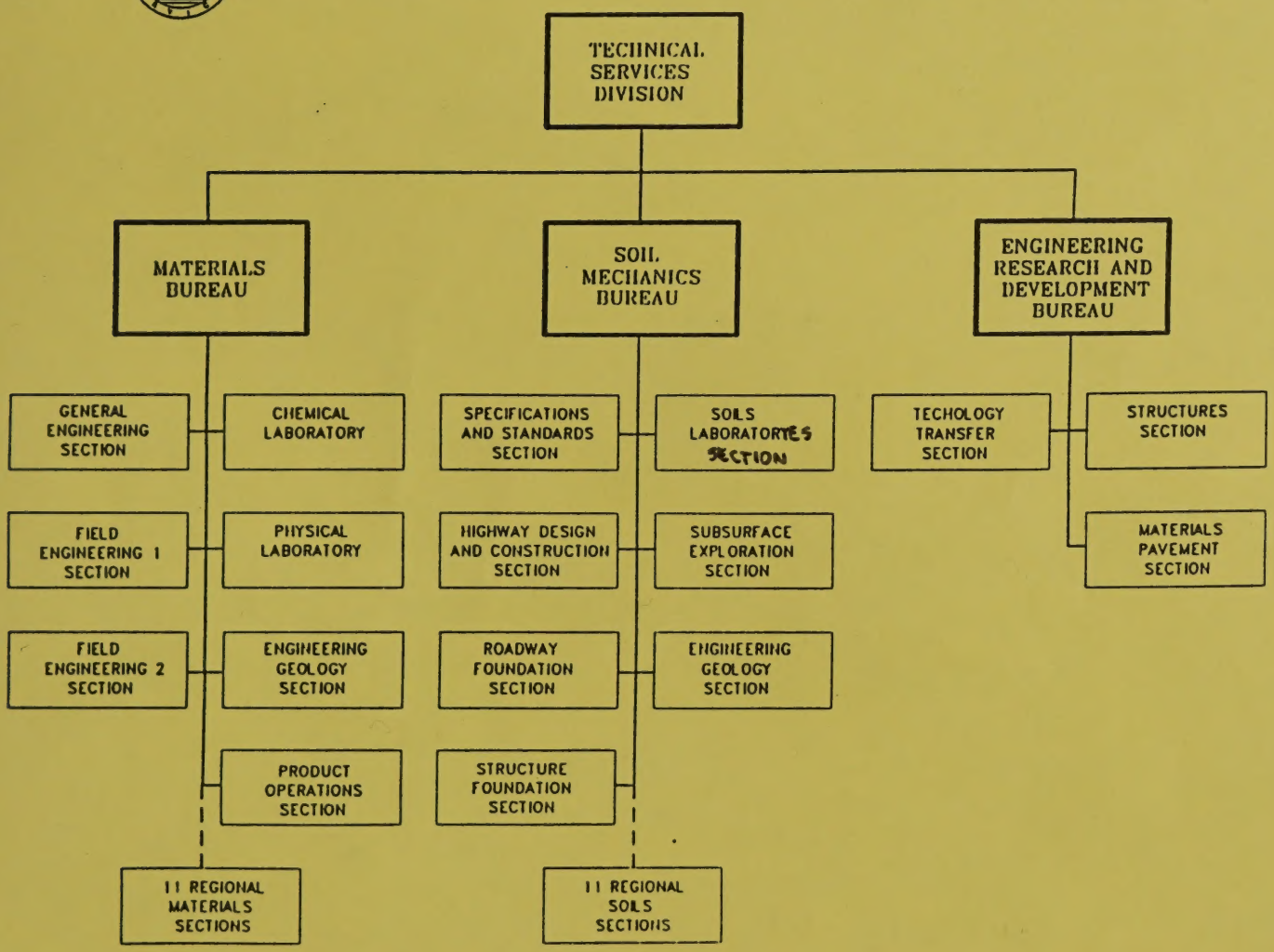

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